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The survival conditions of SMEs in Guangdong Province of China: An empirical research under the global economic crisis

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This study makes a detailed analysis of the survival conditions of small and medium enterprises (SMEs), based on a sample of 403778 domestic and 28446 foreign owned new-registered SMEs founded during the period from 2000 to 2009 in Guangdong province of China. By adopting the accelerated failure time model, this study confirms that various disadvantage factors emerging in 2008, especially the global economic crisis, indeed have an impact on the SMEs' survival prospect of Guangdong province in China.

Key words: Small and medium enterprises (SMEs), survival condition, accelerated failure time model, global economic crisis, emerging economy.

INTRODUCTION

The role of small and medium enterprises (SMEs) has obtained great attention in the last decades, especially SMEs' functions of creating jobs and stimulating innovations. The governments from various countries all attach great importance with the development of SMEs. They provide policies not only to encourage the establishing of small business, such as transfer payments, loans, subsidies, tax benefits, etc., but also to help them grow up and expand.

In China, the SMEs not only obtain remarkable development, but also play a more and more important role in national economy since the economic transition began from the 1970s. After China joined the WTO in late 2001, along with the removal of world trade barriers and flourishing development of export trade, the SMEs in China's southeast coastal areas, such as Guangdong and Zhejiang provinces, obtained unprecedented development. The development of export and SMEs in southeast coastal areas of China is one of the most important factors explaining the economic prosperity of the country over the past few years.

SMEs are characterized by high entry rate and high

mortality rate. The SMEs in Guangdong, Zhejiang and many other provinces of China obtained flourishing development because of the increasing of foreign trade over the last few years. However, the survival conditions of the SMEs deteriorated since a series of events happened after 2008, such as the increasing of labor cost and material cost, the reducing of the export tax rebate rate of China, the appreciation of the RMB, the implications of the New Labor Contract Law in China, and particularly the break out of the global economic crises, etc. The deteriorations of survival conditions of SMEs are highly concerned by various social circles. For example, a large number of reports about the worsening of SMEs' survival environment and the SMEs' survival difficulties appeared in various forms of media, such as TVs, newspapers, web sites, etc. The local governments such as Guangdong and Zhejiang frequently submitted reports to the central government to show the worsening conditions of SMEs' survival and the central government also carries out numerous investigations to learn the specific situations of SMEs' survival. Besides the press circles and policy makers, many famous Chinese economists such as Steven Cheung and Larry Lang also appealed the government and other social circles concerning the survival difficulties of SMEs appearing in Guangdong and Zhejiang in their essays or lectures.

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As it is well known, the global economic crises had a large impact on enterprises' survival in global scope. Many world-renowned large enterprises such as Lehman Brothers and General Motors went bankrupt in the crisis, and the governments' unprecedented relief measures indicated this crisis had been the most severe global economic crisis since the Great Depression in 1929. Except the impact of this crisis on the global financial systems and large enterprises, the crisis also creates an even huger impact on SMEs, especially export-oriented SMEs in China.

The studies point out that the crisis transmits to emerging economies through three mechanisms: remittances, capital flows and trade (Griffith-Jones and Ocampo, 2009). Thus, since so many emerging economies, especially these in Asia, highly rely on the external demands and global economic conditions, these countries/regions are largely impacted by the crisis. More specifically, the shrinking demands of developed countries may worsen the survival conditions of export-oriented SMEs in many parts of the world.

However, as to our knowledge, little empirical research has been done on the topics of the impact of global economic crisis on the survival of SMEs. In China, though so many reports of the survival crises of SMEs in Zhejiang and Guangdong had been done, up to now, very little precise and comprehensive academic research has been done on this particular topic. The survival condition of SMEs under those difficulties and the crises is still a question to be investigated.

The purpose of this paper is to investigate the survival conditions of the SMEs in Guangdong of China by using a long period data (2000 to 2009), especially to investigate the survival conditions of SMEs in 2008 and 2009 under the crises. By comparing the survival conditions of different types (ownerships, sectors, etc.), this study may provide new empirical results in the field of the exit of SMEs in academic and important reference to policy decision of government.

LITERATURE REVIEW

The SMEs' survival is affected by a wide range of factors. Due to previous researches and the topics of this research, we focus on analyzing a number of factors which impact the SMEs survival conditions: age, size, ownership, sector, region, and macro economics from previous literatures. Though there are many other factors which may have impacts on SMEs survival, such as the entrepreneurs' characteristics (age, gender, educational background, the experience of management in relevant sectors, etc.) and the strategies the enterprises adopt, these factors' data are not available for us. Thus, we do not have to consider those factors in our research even though they frequently appear in previous literatures such as the factors of Abdesselam et al. (2004), Esteve-Pérez

and Mañez-Castillejo (2008). However, the factors we examine are the most frequently and ordinarily examined factors in previous literatures.

Age

Regarding the relationship of SMEs' age and survival, there are three different points of view. Originally, Stinchcombe (1965) first stated from the perspective of organization theory concerning this phenomenon that the enterprise's death risk decreases with the increase of the enterprise's age; as such, the enterprise's survival is in line with the hypothesis of "liability of newness". Since then, many studies have found that SMEs death risk monotonely decreases, while the enterprises age increases (Mitchell, 1994; Mata and Portugal, 1994; Dunne et al., 1989). The main explanation for this phenomenon is that with the increasing of age, the enterprises gradually adapt to the environment, form specific cultures and processes, and establish trust relationships with their partners; hence, the old enterprises have higher survival prospects than the new start-ups (Carroll and Hannan, 2000; Nelson and Winter, 1982).

Later, Brüderl and Schussler (1990), Fichman and Levinthal (1991) and Mahmood (2000) made several amendments to the hypothesis of "liability of newness", proposing that with the increasing of age, the SMEs death risk follows an inverted U-shape pattern, rather than continuously declines with the increase of age. In enterprise's early birth stages, enterprise continues to consume the original capital, but has not yet had time to establish a reputation in the market, so the enterprise's death risk gradually increases and reaches its extreme in a certain period. Then when the enterprise gradually adapt to the environment, enterprise's death risk gradually reduces, which indicates enterprise death risk has an inverted "U"-shape pattern in relationship with age. This hypothesis of "liability of adolescence" is also confirmed by many empirical researches.

In addition, two main views by Baum (1989), Hanna (1998) and other scholars also raised the hypothesis that there is a "liability of senescence" relationship between SMEs' survival and age, namely, the elderly enterprises are more rigid than the young in many respects, so they cannot better adapt to the rapidly changing competitive environment when the enterprise reaches a certain age, making enterprise death risk increases once again.

Size

Organizational ecologists often discuss the "liability of smallness" in connection with the liability of newness (Aldrich and Auster, 1986; Brüderl and Schüssler, 1990; Audretsch and Mahmood, 1994). The assumption is that large new businesses have better survival prospects than

small new businesses. Generally, the size of an enterprise is measured by its employment, its initial amount of capital or its turnover in the first year. Empirical evidence for this hypothesis of “liability of smallness” in manufacturing is provided by several studies for different countries (Audretsch and Mahmood, 1995; Geroski, 1992; Honjo, 2000; Mata and Portugal, 1994, 1999; Segarra and Callejon, 2002). The explanations for this assumption are as follows. Industrial organization theories argue that small enterprises have to cope with high disadvantages of scale (Strotmann, 2007); smaller enterprises employ less able managers, and will be the first to leave the market when the environment become worse, for example, when wages grow and the opportunity cost of being an entrepreneur increases (Lucas, 1978); moreover, small enterprises are supposed to face higher restrictions on financing, leading to a higher risk of insolvency and illiquidity; and finally, in most cases, enterprises adopt different technologies according to their sizes (Mata and Portugal, 1994).

Ownership

From the enterprise ownership nature, scholars have done a large number of studies in the survival differences between the independent enterprises and other subsidiaries of molecular enterprises. Because of the independent enterprise's disadvantage in enterprise scale, management experience and other respects, the independent enterprises tend to have a greater death risk than subsidiaries. The empirical studies of Audretsch and Mahmood (1995), Mata and Portugal (1994), Strotmann (2007) and other scholars have shown that the survival of independent SMEs is worse.

Also, there is a small amount of scholars focusing on the survival differences between domestic enterprises and foreign-owned enterprises. Mata and Portugal (2002) did a comparative analysis about the survival conditions and impact factors between the domestic enterprises and foreign-owned enterprises in Portugal during the period of 1983 to 1989, and found that the enterprise survival is mainly affected by ownership advantages, size and growth strategies, the internal organization of firms, and by industry characteristics such as economies of scale, and industry entry and growth. But after controlling these factors, they found there is no significant difference between the foreign-owned and domestic enterprises' survival.

Sector

When it comes to sectoral determinants, the common factors include: industry size, industry growth, and the type of “technological regime”.

Industry size is considered to have a positive effect on enterprise survival. The reason is that in larger industry

size, a start-up of a new enterprise is less perceptible for the incumbents. Therefore, the start-up enterprises face less aggressive competition of incumbents than in smaller industry size (Strotmann, 2007). In empirical field, Mata and Portugal (1994) and Strotmann (2007) both found a negative impact on the hazard rate from industry size measured in terms of the number of enterprises in an industry.

In the rapid growth industries, enterprises are facing better demand conditions that increase the product's price-cost-margin; and the incumbents' market share will not loose due to the entry of newly enterprises, hence the incumbents will not adopt an aggressive reaction to new entry enterprises (Bradburd and Caves, 1982). Therefore, the enterprises in fast growing industries may be easier to survive as many theory and empirical research results show (Mata and Portugal, 1994; Audretsch, 1995a, b; Tveterås and Eide, 2000). However, Gort and Steven (1982) also pointed out that the rapid growth industries are usually in the early industrial life cycle stages, so their external environment is relatively instable, and enterprises need to constantly adjust to the changing circumstances, which may lead a greater risk of business failure.

The type of “technological regime” is seldom considered in the empirical studies on survival. According to Neo-Schumpeterian economists such as Nelson and Winter (1982), Winter (1984), Dosi (1988), Malerba and Orsenigo (1993, 1995, 1999) and Breschi et al. (2000), there are two types of technological regimes: ‘entrepreneurial’ and ‘routinised regime’. The entrepreneurial regime refers to technological innovations that tend to replace the old technology, which is characterized by technologies with high opportunities, low appropriability and low cumulativeness, and is often brought by new enterprises, while the incumbents have less incentive to evolve. Consequently, an industry subjected to the technology regime of creative destruction tends to have lower entry barriers, and new firms are likely to dominate the innovation activities of the industry. Accordingly, new firms in this type of industry are more likely to survive, as stated by Van Dijk (2000) and Audretsch (2001).

On the other hand, the routinised regime is characterized by creative accumulative technology, which means innovation makes the prevailing technology deeper and more efficient to serve the current market or improve production processes (Lin and Huang, 2008). Therefore, the incumbents have more advantages in the routinised regime.

Region

The regional environment of a start-up is a decisive factor to a SMEs' survival chances. Due to the different system, culture and resource endowment in the different regions, the SMEs' living conditions present different

characteristics. However, the lack of detailed regional information leads many researches only to take the degree of regional agglomeration into account. There are arguments both for a positive and negative relationship between the degree of regional agglomeration and survival. For example, Keeble and Walker's (1994) empirical research results show that the regional agglomeration has a positive relationship with the newly established enterprises' death risk, while Audretsch and Vivarelli (1995) and Gerlach and Wagner's (1994) research found that regional agglomeration has no significant impact on the new enterprises survival. But Fotopoulos and Louri (2000a) found that new enterprises have better survival prospects in high-agglomerated areas by investigating manufacturing enterprises of Greece. The explanations of the impact of regional agglomeration to SMEs survival are a controversy in theory. On the one hand, scholars who agree that regional concentration will help reduce enterprises' death risk believe that regional agglomeration is not only able to reduce the distance between enterprises and suppliers, customers and co-operation partners, but also more useful for enterprises to find and employ high quality talents. On the other hand, with the expansion of trade, the overload transportation costing as well as the high-level salaries will be harmful to SMEs survival in the regional agglomerated areas.

Macro-economic conditions

Some scholars also take the impact of macroeconomic conditions on the survival chances of start-ups into account in their empirical analysis. Audretsch and Mahmood (1995) who used the macroeconomic unemployment rate and the real interest rate as macroeconomic level variables measured the effects of economic cycle to SMEs survival, and found that the unemployment rate has a significant positive correlation with SMEs death risk, indicating that at higher unemployment rates, or macroeconomic decline periods, SMEs face greater failure risk, but their study did not find that the real interest rate have a significant positive correlation with SMEs death threat. Fotopoulos and Louri (2000b) found that the economic cycle plays an important role in determining the SMEs survival. Particularly, Honjo (2000) examined the SMEs' survival conditions pre- and post- the Japan bubble economy in 1989 to 1990. After the collapse of the bubble economy, the Japanese economy confronted a great depression and the new firms which established just before or after the collapse tended to confront a higher risk of business failure. Park et al. (2008) examined how export demand shocks associated with the 1997 Asian financial crisis affected Chinese exporters.

Even though the decoupling hypothesis presents that the pattern of business cycle in emerging Asian economies generally display a low degree of synchronization with the developed countries, this crisis has largely

disapproved this as studies show (Fidrmuc and Korhonen, 2009; Park, 2009). Dooley and Hutchison (2009) also find that though the emerging markets appeared to be somewhat insulated from developments in U.S. financial markets from early 2007 to summer 2008, a regression "event study," focusing on 15 types of news, indicates that a range of financial and real economic news emanating from the US had statistically and economically large impacts on 14 emerging markets and several news events uniformly moved markets.

The great impact on emerging economy may be a main difference compared to previous crisis, because economic globalization and Asia are heavily dependent on external demands and global economic conditions. As the trade is one of the most important mechanisms of the global crisis transmission, the impacts of the crisis on those economies or regions which highly rely on the external demands seems to be unavoidable, and the export-oriented SMEs may endure a great impact to them.

Above all, most of the mentioned researches are taken under the context of developed countries. Hall and Wahab (2007) once employed 320 recipients of loans from the Malaysian Youth Economic Trust Fund to identify factors associated with whether they survived. The factors such as human and social capital, motivation, location and types of strategy are taken into account, and the firm age and size are controlled. As China is the largest emerging economy in the world and in the transition process from a planned economy to a market economy since late 1970s, Li et al. (2005) explored the role of ownership, efficiency and financial resources in determining firm survival in China's economic transition by a data sample from the Chinese Zhongguancun science park. These researches under the context of the emerging economies have supplemented the existing literatures that the SMEs' survival not only presents some commonly features which have been proven under the context of the developed countries, but also presents some features which are different from that of the SMEs in the developed countries (Li et al., 2005). However, until now, less research have been done on the background of crisis to emerging economies, which leads to our mainly work of this research.

METHODOLOGY

The data used in this study comes from the Industrial and Commercial Bureau of Guangdong province, a specialized agency in charge of market supervision/regulation and law enforcement through administrative means, carrying out regulations in the fields of enterprise registration, competition, consumer protection, trademark protection and combating economic illegalities. The data sample cover 403778 domestic and 28446 foreign owned firms whose initial capitals are respectively not above 10 million Yuan and Dollars, which respectively account for 97.64 and 83.87% of domestic and foreign owned newly established firms during the period from January 1st, 2000 to the August 1st, 2009. These SMEs are located in 20 cities of Guangdong except Shenzhen since the

Table 1. The regional distribution of the data samples.

The Pearl River Delta Region								
Guangzhou	Foshan	Dongguan	Zhongshan	Jiangmen	Zhuhai	Huizhou	Zhaoqin	Total
7559	29384	35050	14609	10010	11658	14483	5814	128567
The East Wing Region					The West Wing Region			
Shantou	Shanwei	Chaozhou	Jieyang	Total	Zhanjiang	Maoming	Yangjiang	Total
6762	2429	5453	2939	17583	6866	6928	6293	20087
The North Mountain Region								
Shaoguan	Heyuan	Meizhou	Qingyuan	Yunfu	Total			
3358	4134	6360	5206	2644	21702			

Due to the fact that only a part of SMEs provided its address information, the total numbers of SMEs in Table 1 are not equal to the total number of data samples.

Table 2. The number of SMEs established and exit in each year during the period 2000 to 2009.

Domestic SMEs											
Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
Established	32299	33714	35539	41755	41589	42098	49478	53798	47019	26489	403778
Percentage	8.00	8.35	8.80	10.34	10.30	10.43	12.25	13.32	11.64	6.56	100.0
Exit	249	2220	4675	7526	8783	10018	12338	15659	16966	11013	89447
Percentage	0.28	2.48	5.23	8.41	9.82	11.20	13.79	17.51	18.97	12.31	100.0
Foreign owned SMEs											
Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
Established	2170	2730	3237	3219	3777	3518	3178	3487	2341	789	28446
Percentage	7.63	9.60	11.38	11.32	13.28	12.37	11.17	12.26	8.23	2.77	100.0
Exit	9	207	233	579	485	493	915	1274	734	613	5542
Percentage	0.16	3.74	4.20	10.45	8.75	8.90	16.51	22.99	13.24	11.06	100.0

enterprises in Shenzhen are independently registered in Shenzhen Industrial and Commercial Bureau. The industrial distribution of our data sample is also wider than previous similar research, since our research sample contains all the sectors from A01 to R92 on a two-digit level of China standard industrial classification. We acquired information about the entry time, exit time (exit here refers to both insolvency exit and voluntary exit), ownership, start-up capital, etc., of each enterprise and the related statistical information as shown in Tables 1 to 3.

The Industrial and Commercial Bureau is one of the most reliable data sources in China for similar research, since every enterprise must register in it to get a legal identification and log out in time when it exits from the market. The SMEs of Guangdong province are also the most suitable data source for this research for many reasons: first, The Guangdong province is the earliest open regions in China since late 1970s, and the SMEs in Guangdong develop highly in the past 30 years; second, many foreigners invest in this region and we can compare the survival conditions of domestic firms and foreign owned firms more clearly; third, these regions are most impacted by various disadvantages factors after 2008, then we can observe the changes of SMEs' survival conditions more clearly.

Table 1 shows the number of enterprises founded in each region

of Guangdong province from 2000 to 2009. The Guangdong province is comprised of four regions: the Pearl River Delta Region, the East Wing Region, the West Wing Region and the North Mountain Region. Since only a part of the data samples provide their address information, the total number of SMEs in Table 1 is not equal to the total number of the data samples. Tables 2 and 3 provide the number of the enterprises founded and exiting each year and the number of enterprises with different ownership types. From Table 3, we can see that the domestic SMEs are accounted for the vast majority of total enterprises with the proportion of 93.42% and most of them are founded in the form of company. In the past near 10 years, the foreigners established 28446 SMEs in Guangdong province, and most of them (75.33%) are established by the investors from Hong Kong, Macao and Taiwan.

This study employs the accelerated failure time (AFT) model to do quantity analysis. The basic form of accelerated failure time model is a linear model of the nature logarithm of survival time T , which is specified as:

$$Y = \mu + \beta'Z + \sigma\epsilon \quad (1)$$

Where Y is the logarithm of survival time/duration T ($Y = \ln T$),

Table 3. The number of SMEs established of each ownership type during the period 1998 to 2007.

Domestic SMEs						
Ownership1	Ownership2	Ownership3	Ownership4	Ownership5	Ownership6	Total
289332	8862	25159	8205	69201	2944	403703
Foreign owned SMEs						
Ownership7	Ownership8	Ownership9	Ownership10	Total		
6257	678	21429	82	28446		

Ownership1 to Ownership 6 respectively present the ownership type of the limited liability company, the corporate-funded enterprises, the branch office and business units, the partnership firm, the sole proprietorship and the “three-plus-one” trading-mix (custom manufacturing with materials, designs or samples supplied and compensation trade). Ownership7 to Ownership10 respectively present the SMEs owned by foreign investors except Hong Kong, Macao and Taiwan investors, the branch of SMEs owned by foreign investors except Hong Kong, Macao and Taiwan investors, the SMEs owned by Hong Kong, Macao and Taiwan investors and Business in China.

$\beta = (\beta_1, \dots, \beta_p)'$ is a vector of regression coefficient, σ is a parameter to be estimated, and $\mathcal{E}$ is the error. The parameter σ before $\mathcal{E}$ is just a parameter used to fix the variance of $\mathcal{E}$ at 1, and it can be omitted, which requires that the variance of $\mathcal{E}$ is allowed to be different from 1. But it is simple to fix the variance of $\mathcal{E}$ at 1 and let σ change. The survival time T is subject to corresponding distributions when the error $\mathcal{E}$ is subject to various probability distributions. For example, when $\mathcal{E}$ follows the standard normal distribution, the corresponding survival time T is subject to the log-normal distribution; when $\mathcal{E}$ is subject to the extreme value distribution, the T follows the Weibull distribution; and when $\mathcal{E}$ is subject to the logistic distribution, the corresponding survival time T is subject to the Log-logistic distribution. Three parametric models are considered in our research, including the Weibull, log-logistic and log-normal models. As the Akaike information criterion is used, we can select the models that best fit our research.

EMPIRICAL RESULTS

We first present the explanatory variables used, then we analyze the survival conditions of new domestic and foreign owned firms of Guangdong province respectively.

We adopt the Weibull model, log-logistic model, and the log-normal model, which are three commonly used accelerated failure time models, in our analysis and adopt the Akaike information criterion (AIC) for model selection.¹ Similar to the coefficient of determination R^2 in ordinary least-square regression, AIC is also an indicator used for judging the quality of a model fitting, and a smaller AIC value indicates a good degree of model fitting. Peng and Wang (2004) point out AIC is a commonly used method for choosing the most appropriate parametric model in survival analysis. Since in our analysis the Weibull model has the smallest AIC value in

all models and the results of the other models are similar to the Weibull model, we only report the results of Weibull model.

The explanatory variables

This study examined the survival conditions of SMEs with different ownership types and sectors during the period of 2000 to 2009, especially the survival conditions of SMEs under the global economic crisis in 2008 and 2009, when many news reported that the SMEs in Guangdong, Zhejiang and many other China southeast coastal provinces endured survival difficulties. To capture the year effects, we introduced year dummy variables year2001 to year2009, which are respectively coded 1 if the firm is found at the corresponding years, otherwise it is coded 0. We omit the dummy variable year2000 to avoid the problem of multicollinearity.

The ownership type of SMEs in Guangdong can be divided into domestic firms and foreign owned firms. The domestic firms are further divided into limited liability companies, the corporate-funded enterprises, the branch office and business units, the partnership firm, the sole proprietorship and the “three-plus-one” trading-mix (custom manufacturing with materials, designs or samples supplied and compensation trade) six types. The foreign owned firms are divided into the SMEs owned by foreign investors except Hong Kong, Macao and Taiwan investors, the branch of SMEs owned by foreign investors except Hong Kong, Macao and Taiwan investors, the SMEs owned by Hong Kong, Macao and Taiwan investors and Business in China four types. Thus, we introduce 10 ownership types dummy variables coded 1 when the SMEs belong to the corresponding ownership types, or else coded 0.

From the sector point of view, we first divide the industries by technology level. The high technology sectors are indentified by the high-tech industry statistical nomenclatures which are issued by the National Bureau

¹ We also tried to estimate the Generalized-gamma model, but the discontinuous regions encountered in the estimation process, so we can't get the results of the Generalized-gamma model.

Table 4. Estimates of the Weibull duration regression for domestic SMEs (strata model).

Explanatory variable	Stratified by year		Stratified by ownership		Stratified by technology level	Stratified by industrial sector
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Age	4.85e-02*** (5.76e-05)	4.85e-02*** (5.76e-05)	4.99e-02*** (6.24e-05)	4.99e-02*** (6.24e-05)	5.05e-02*** (6.25e-05)	5.05e-02*** (6.25e-05)
Age ²	-2.10e-04*** (5.42e-07)	-2.10e-04*** (5.42e-07)	-2.20e-04*** (4.72e-07)	-2.20e-04*** (4.72e-07)	-2.20e-04*** (5.76e-07)	-2.20e-04*** (5.76e-07)
Capital	3.16e-05*** (3.21e-06)	3.18e-05*** (3.21e-06)	3.27e-05*** (2.46e-06)	3.28e-05*** (2.46e-06)	4.23e-05*** (3.43e-06)	4.21e-05*** (3.43e-06)
Year2001			-1.23e-02*** (1.01e-03)	-1.23e-02*** (1.01e-03)	-9.28e-03*** (1.22e-03)	-9.19e-03*** (1.22e-03)
Year2002			-1.02e-02*** (1.07e-03)	-1.01e-02*** (1.06e-03)	-7.70e-03*** (1.31e-03)	-7.79e-03*** (1.31e-03)
Year2003			2.73e-03*** (1.06e-03)	2.78e-03*** (1.06e-03)	6.13e-03*** (1.42e-03)	6.04e-03*** (1.42e-03)
Year2004			2.12e-02*** (1.14e-3)	2.12e-02*** (1.14e-03)	2.74e-02*** (1.71e-03)	2.74e-02*** (1.71e-03)
Year2005			6.98e-02*** (1.28e-03)	6.98e-02*** (1.28e-03)	7.95e-02*** (1.85e-03)	7.94e-02*** (1.85e-03)
Year2006			1.64e-01*** (1.42e-03)	1.64e-01*** (1.42e-03)	1.81e-01*** (1.66e-03)	1.81e-01*** (1.66e-03)
Year2007			2.80e-01*** (1.80e-03)	2.80e-01*** (1.80e-03)	3.05e-01*** (1.88e-03)	3.05e-01*** (1.88e-03)
Year2008			3.25e-01*** (2.77e-03)	3.25e-01*** (2.77e-03)	3.59e-01*** (2.79e-03)	3.59e-01*** (2.79e-03)
Year2009			2.62e-01*** (1.03e-02)	2.62e-01*** (1.03e-02)	2.93e-01*** (9.90e-03)	2.94e-01*** (9.91e-03)
Ownership 1	3.45e-02*** (1.18e-02)	3.43e-02*** (1.18e-02)			4.94e-02*** (1.28e-02)	4.91e-02*** (1.27e-02)
Ownership 2	2.23e-02* (1.19e-02)	2.19e-02* (1.19e-02)			3.53e-02*** (1.28e-02)	3.52e-02*** (1.28e-02)
Ownership 3	2.41e-02** (1.18e-02)	2.39e-02** (1.19e-02)			3.64e-02*** (1.28e-02)	3.62e-02*** (1.28e-02)
Ownership 4	2.19e-02* (1.19e-02)	2.18e-02* (1.20e-02)			3.42e-02*** (1.29e-02)	3.37e-02*** (1.29e-02)
Ownership 5	2.47e-02** (1.18e-02)	2.44e-02** (1.18e-02)			3.64e-02*** (1.28e-02)	3.63e-02*** (1.27e-02)
Ownership 6	-1.45e-02 (1.20e-02)	-1.48e-02 (1.21e-02)			-1.10e-02 (1.30e-02)	-1.21e-02 (1.30e-02)
Traditional Sec	-4.76e-03*** (1.45e-03)		-4.80e-03*** (1.34e-03)			
Emerging Sec	7.51e-04 (1.19e-03)		8.78e-04 (1.02e-03)			
Potential Sec	7.50e-03** (3.52e-03)		4.29e-02 (2.74e-02)			
High Tech		-2.76e-03 (2.42e-03)		-3.96e-03* (2.03e-03)		
Constant	2.03*** (1.19e-02)	2.03*** (1.19e-02)	2.03*** (1.64e-03)	2.03*** (1.63e-03)	1.97*** (1.28e-02)	1.97*** (1.29e-02)
N	403745	403745	403745	403745	403745	403745
X ² (LR test)	502913.71	502889.74	491069.65	491056.45	487276.86	487238.65
Log likelihood	-3455.56	-3467.55	-8910.74	-8917.33	-12328.88	-12306.26
AIC	6975.12	6995.09	17879.47	17888.67	24701.76	24664.51

Ownership1 to Ownership6 respectively present the ownership type of the limited liability company, the corporate-funded enterprises, the branch office and business units, the partnership firm, the sole proprietorship, and the “three-plus-one” trading-mix (custom manufacturing with materials, designs or samples supplied and compensation trade). Figures in parentheses denote the standard deviation value, *, **, *** respectively represents the confidence level at 90, 95 and 99%.

of Statistical of China. The dummy variable high tech is coded 1 if SMEs belong to the high technology sectors, or else coded 0.

The industrial structure of Guangdong province

is composed by 9 main industries, which include three traditional industries (food and beverage, textile and apparel, and building materials), three emerging industries (electronics, electrical

machinery and special equipment, and petroleum and chemical), and three potential industries (forest and paper, biomedical, and cars and motor cars). In order to observe the difference of

survival conditions of these industries and the others, we introduce three dummy variables traditional sec, emerging sec and potential sec which are coded 1 if SMEs belong to these sectors, or else coded 0.

The survival conditions of domestic SMEs in Guangdong province

Since we introduce many categorical variables in our research, the strata model may be appropriate for our analysis. To do this, we estimate the strata model which is stratified by found year, ownership, technology level and industrial sector respectively. The results are shown in Table 4. The columns (i) and (ii) are the results of the model stratified by found year. As it shows, after controlling the year variable, there are significant differences between different ownership enterprises except ownership 6 (the “three-plus-one” trading-mix (custom manufacturing with materials, designs or samples supplied and compensation trade)). The limited liability companies (ownership 1) have best survival prospects and the partnership firms (ownership 4) have the worst survival prospect. From the industrial sector perspectives, the SMEs in traditional sectors have higher risk of business failure compared to the enterprises in other sectors since the coefficient is significant negative. The coefficients of the emerging sec which is insignificantly positive but significantly positive for potential sec are, implying that the SMEs in the potential sectors have better survival prospects.

The columns (iii) and (iv) of Table 4 are the results of the model stratified by the types of ownership. As it shows, the survival conditions are significantly different among the enterprises established in the year of 2000 to 2009. Compared to the year 2000, the survival conditions of SMEs established in 2001 and 2002 are even worse. However, the survival conditions of SMEs established during the period 2003 to 2008 have a better and better survival prospect. This is because at the end of 2001, China entered the WTO formally. The great declining of trade tax provides a large amount of chances to SMEs in Guangdong, as it is one of the most outgoing regions in China. The survival conditions of domestic SMEs established in 2008 did not present a decline compared to those established in 2007. However, the survival conditions of domestic SMEs established in 2009 become worse. This may be due to the occurrence of the economic crisis in the autumn of 2008.

In columns (v) and (vi) of Table 4 we further estimate the models stratified by the technology level and industrial sector. The results are similar to the results of previous models. The SMEs established in 2001 and 2002 have the worst survival conditions. The survival conditions of domestic enterprises began to worsen in 2009, but did not in 2008. The survival conditions of firms with different ownerships still have significant differences

expect ownership 6 (the “three-plus-one” trading-mix (custom manufacturing with materials, designs or samples supplied and compensation trade)), and the limited liability companies (ownership 1) have best survival prospect and the partnership firms (ownership 4) have the worst survival prospect.

In order to test if the results are robust to different size classes, after estimating the strata model, we further estimate the model in which the samples are divided into different size classes by the size of the initial capital of each enterprise. We estimate the models for the total sample, the sub-sample in which the initial capital below 100000 (contained 100000) Yuan (RMB), the sub-sample in which the initial capital between 100000 to 1 million (contained 1 million) Yuan and the sub-sample in which the initial capital between 1 million to 10 million (contained 10 million) Yuan respectively. The results are shown in Table 5. Generally, the results in Table 5 are consistent with results in Table 4 except some minor differences. For example, the SMEs established in 2009 in the below 100 thousand Yuan group do not present worse survival condition compared to those established in 2008. Also, the survival conditions of different ownerships are not significantly different when the initial capital is up to 100 thousand Yuan. The SMEs in traditional sectors have higher risk of death, whereas the SMEs in emerging sectors and potential sectors have better survival conditions. The high technologies SMEs confront higher risk of business failure.

In order to test whether the SMEs' survival conditions become worse in recent years, we examine the moderating effect of the found year variable on the relationship between industrial sectors, technology level and ownership types of enterprises and enterprises' survival respectively. The results are shown in Table 6. As shown, the product terms of the traditional sec, emerging sec, potential sec, and high tech with year2009 are negative and two of them are significant, while the product terms of them with year2008 are positive. These results imply that the year 2009 has a negative moderating effect on the relationship between industrial sector and SMEs' survival. The SMEs found in 2009 have worse survival conditions compared to those found in 2008. The moderating effects of found year on the relationship between ownership and SMEs survival are not significant in most cases, thus we omit all the insignificant product terms in column (iii) of Table 6 due to the constraints of space.

In Table 7, we estimate the survival conditions of SMEs with different Ownerships during the period from 2000 to 2009. Though the ownership types of the ownership 2 (the corporate-funded enterprises), ownership 4 (the partnership firm), and ownership 6 (the “three-plus-one” trading-mix (custom manufacturing with materials, designs or samples supplied and compensation trade)) do not present characters that the survival conditions began to worsen in 2009, they only account for a small small part of the total sample. The estimation of Table 7

Table 5. Estimates of the Weibull duration regression for domestic SMEs of different capital size.

Explanatory variable	Total sample		100 thousand below		100 thousand to 1 million		1 million above	
Age	5.05e-02*** (6.37e-05)	5.05e-02*** (6.37e-05)	5.77e-02*** (1.46e-04)	5.77e-02*** (1.46e-04)	4.78e-02*** (7.18e-05)	4.78e-02*** (7.19e-05)	4.58e-02*** (1.75e-04)	4.58e-02*** (1.75e-04)
Age ²	-2.21e-04*** (4.88e-07)	-2.21e-04*** (4.88e-07)	-2.69e-04*** (1.13e-06)	-2.69e-04*** (1.13e-06)	-2.05e-04*** (5.45e-07)	-2.05e-04*** (5.45e-07)	-1.85e-04*** (1.32e-06)	-1.85e-04*** (1.32e-06)
Capital	4.23e-05*** (2.77e-06)	4.25e-05*** (2.77e-06)	-3.26e-04 (2.64e-04)	-2.98e-04 (2.63e-04)	1.01e-04*** (1.66e-05)	1.01e-04*** (1.66e-05)	3.63e-06 (3.50e-06)	3.85e-06 (3.49e-06)
Year2001	-9.32e-03*** (1.08e-03)	-9.29e-03*** (1.08e-03)	-9.66e-03*** (2.87e-03)	-9.55e-03*** (2.87e-03)	-8.86e-03*** (1.14e-03)	-8.82e-03*** (1.14e-03)	-1.18e-02*** (2.65e-03)	-1.19e-02*** (2.65e-03)
Year2002	-7.85e-03*** (1.13e-03)	-7.84e-03*** (1.13e-03)	-1.51e-02*** (2.99e-03)	-1.52e-02*** (2.99e-03)	-6.50e-03*** (1.20e-03)	-6.56e-03*** (1.20e-03)	4.27e-03 (2.81e-03)	4.26e-03 (2.81e-03)
Year2003	5.91e-03*** (1.14e-03)	5.98e-03*** (1.14e-03)	-3.68e-03 (3.03e-03)	-3.51e-03 (3.03e-03)	6.11e-03*** (1.20e-03)	6.13e-03*** (1.20e-03)	2.28e-02*** (2.96e-03)	2.28e-02*** (2.95e-03)
Year2004	2.73e-02*** (1.23e-03)	2.73e-02*** (1.23e-03)	1.94e-02*** (3.32e-03)	1.99e-02*** (3.32e-03)	2.25e-02*** (1.28e-03)	2.25e-02*** (1.28e-03)	6.04e-02*** (3.35e-03)	6.03e-02*** (3.35e-03)
Year2005	7.94e-02*** (1.38e-03)	7.94e-02*** (1.38e-03)	5.95e-02*** (3.47e-03)	5.96e-02*** (3.47e-03)	7.23e-02*** (1.46e-03)	7.22e-02*** (1.46e-03)	1.29e-01*** (4.03e-03)	1.29e-01*** (4.03e-03)
Year2006	1.81e-01*** (1.53e-03)	1.81e-01*** (1.53e-03)	1.68e-01*** (3.58e-03)	1.68e-01*** (3.58e-03)	1.70e-01*** (1.77e-03)	1.70e-01*** (1.77e-03)	2.36e-01*** (4.97e-03)	2.36e-01*** (4.97e-03)
Year2007	3.05e-01*** (1.92e-03)	3.05e-01*** (1.92e-03)	3.39e-01*** (4.12e-03)	3.39e-01*** (4.12e-03)	2.77e-01*** (2.41e-03)	2.77e-01*** (2.42e-03)	3.24e-01*** (6.31e-03)	3.24e-01*** (6.31e-03)
Year2008	3.59e-01*** (2.92e-03)	3.59e-01*** (2.92e-03)	4.58e-01*** (5.69e-03)	4.58e-01*** (5.69e-03)	3.09e-01*** (4.02e-03)	3.09e-01*** (4.02e-03)	3.49e-01*** (1.02e-02)	3.49e-01*** (1.02e-02)
Year2009	2.94e-01*** (9.94e-03)	2.94e-01*** (9.94e-03)	5.10e-01*** (1.78e-02)	5.10e-01*** (1.78e-02)	1.81e-01*** (1.31e-02)	1.81e-01*** (1.31e-02)	3.04e-01*** (5.67e-02)	3.04e-01*** (5.67e-02)
Ownership 1	4.94e-02*** (1.32e-02)	4.92e-02*** (1.32e-02)	7.05e-02*** (2.14e-02)	7.10e-02*** (2.14e-02)	2.29e-02 (1.95e-02)	2.26e-02 (1.95e-02)	-2.55e-01 (1.07)	-2.55e-01 (1.08)
Ownership 2	3.56e-02*** (1.32e-02)	3.52e-02*** (1.32e-02)	5.37e-02** (2.15e-02)	5.44e-02** (2.15e-02)	4.77e-03 (1.96e-02)	4.16e-03 (1.96e-02)	-2.82e-01 (1.07)	-2.83e-01 (1.08)
Ownership 3	3.65e-02*** (1.32e-02)	3.63e-02*** (1.32e-02)	4.80e-02** (2.13e-02)	4.85e-02** (2.13e-02)	8.92e-03 (1.96e-02)	8.55e-03 (1.96e-02)	-2.61e-01 (1.07)	-2.62e-01 (1.08)
Ownership 4	3.40e-02** (1.33e-02)	3.38e-02** (1.33e-02)	5.29e-02** (2.16e-02)	5.37e-02** (2.16e-02)	9.60e-03 (1.97e-02)	9.37e-03 (1.97e-02)	-2.71e-01 (1.07)	-2.72e-01 (1.08)
Ownership 5	3.66e-02*** (1.32e-02)	3.63e-02*** (1.32e-02)	5.46e-02** (2.13e-02)	5.56e-02*** (2.13e-02)	1.35e-02 (1.96e-02)	1.29e-02 (1.96e-02)	-2.68e-01 (1.07)	-2.69e-01 (1.08)
Ownership 6	-1.17e-02 (1.34e-02)	-1.18e-02 (1.34e-02)	9.83e-02 (9.14e-02)	1.01e-01 (9.14e-02)	-3.29e-02* (2.00e-02)	-3.37e-02* (2.00e-02)	-3.01e-01 (1.07)	-3.02e-01 (1.08)
Traditional Sec	-5.25e-03*** (1.36e-03)		-4.43e-03 (3.36e-03)		-6.02e-03*** (1.44e-03)		-1.50e-04 (3.74e-03)	
Emerging Sec	1.27e-03 (1.08e-03)		1.13e-02*** (2.89e-03)		1.23e-05 (1.13e-03)		-4.16e-03 (2.67e-03)	
Potential Sec	9.54e-03*** (3.08e-03)		1.67e-02** (8.22e-03)		4.28e-03 (3.32e-03)		8.44e-03 (6.60e-03)	
High Tech		-3.42e-03 (2.20e-03)		6.22e-03 (7.12e-03)		-2.09e-03 (2.25e-03)		-1.12e-02** (4.51e-03)
Constant	1.97*** (1.33e-02)	1.97*** (1.33e-02)	1.79*** (2.16e-02)	1.79*** (2.16e-02)	2.07*** (1.96e-02)	2.07*** (1.96e-02)	2.38** (1.07)	2.38** (1.08)
N	403745	403745	118570	118570	226540	226540	58635	58635
X ² (LR test)	487309.22***	487283.87***	131925.93***	131904.20***	304126.74***	304108.38***	55984.93***	55986.35***
Log likelihood	-12338.95	-12351.624	-12082.75	-12093.61	5889.50	5880.3227	-940.04289	-939.33072
AIC	24723.9	24745.25	24211.49	24229.23	-11733.01	-11718.65	1926.086	1920.661

Ownership1 – Ownership6 respectively present the ownership type of the limited liability company, the corporate-funded enterprises, the branch office and business units, the partnership firm, the sole proprietorship, and The “Three-plus-one” trading-mix (custom manufacturing with materials, designs or samples supplied and compensation trade). Figures in parentheses denote the standard deviation value, *, **, *** respectively represents the confidence level at 90, 95 and 99%.

further confirmed the findings in Tables 4 and 5 that the SMEs in traditional sectors have higher risk of business failure and the SMEs in potential sectors have better survival conditions.

In Table 8, we analyze the survival conditions of

different sectors. The SMEs in each sector sub samples all present the features of worse survival conditions in 2009. Since we get the same results from all different models, we are confident that our results are robust

The survival conditions of foreign owned SMEs

For foreign owned SMEs, the estimation of the trata model is shown in Table 9. Similar to Table 4,

Table 6. The test of the moderating effect of the year on different types of domestic SMEs.

Explanatory variable	(i)	Explanatory variable	(ii)	Explanatory variable	(iii)
Age	5.05e-02*** (6.37e-05)	Age	5.05e-02*** (6.37e-05)	Age	5.06e-02*** (6.38e-05)
Age ²	-2.21e-04*** (4.88e-07)	Age ²	-2.21e-04*** (4.88e-07)	Age ²	-2.21e-04*** (4.88e-07)
Capital	4.24e-05*** (2.77e-06)	Capital	4.26e-05*** (2.77e-06)	Capital	4.23e-05*** (2.79e-06)
Year2001	-9.04e-03*** (1.17e-03)	Year2001	-9.41e-03*** (1.09e-03)	Year2001	-3.87e-02 (3.36e-02)
Year2002	-7.53e-03*** (1.23e-03)	Year2002	-8.32e-03*** (1.14e-03)	Year2002	-6.23e-02 (4.23e-02)
Year2003	5.13e-03*** (1.24e-03)	Year2003	5.52e-03*** (1.16e-03)	Year2003	7.47e-02** (3.17e-02)
Year2004	2.54e-02*** (1.34e-03)	Year2004	2.70e-02*** (1.24e-03)	Year2004	4.96e-02 (3.17e-02)
Year2005	7.78e-02*** (1.48e-03)	Year2005	7.89e-02*** (1.39e-03)	Year2005	1.00e-01* (5.45e-02)
Year2006	1.79e-01*** (1.63e-03)	Year2006	1.80e-01*** (1.54e-03)	Year2006	1.27 (72.83)
Year2007	3.02e-01*** (2.03e-03)	Year2007	3.04e-01*** (1.93e-03)	Year2007	3.00e-01*** (2.44e-02)
Year2008	3.55e-01*** (3.10e-03)	Year2008	3.58e-01*** (2.95e-03)	Year2008	3.07e-01*** (1.78e-02)
Year2009	3.06e-01*** (1.15e-02)	Year2009	2.98e-01*** (1.03e-02)	Year2009	1.68 (691.09)
Ownership 1	4.88e-02*** (1.32e-02)	Ownership1	4.93e-02*** (1.32e-02)	Ownership1	6.23e-02*** (4.60e-03)
Ownership 2	3.51e-02*** (1.32e-02)	Ownership2	3.52e-02*** (1.33e-02)	Ownership2	5.91e-02*** (5.04e-03)
Ownership 3	3.58e-02*** (1.32e-02)	Ownership3	3.63e-02*** (1.32e-02)	Ownership3	4.50e-02*** (4.86e-03)
Ownership 4	3.31e-02** (1.33e-02)	Ownership4	3.41e-02*** (1.33e-02)	Ownership4	5.10e-02*** (6.44e-03)
Ownership 5	3.59e-02*** (1.32e-02)	Ownership5	3.64e-02*** (1.32e-02)	Ownership5	4.83e-02*** (5.03e-03)
Ownership 6	-1.08e-02 (1.34e-02)	Ownership6	-1.09e-02 (1.34e-02)	Ownership6	-5.05e-03*** (1.36e-03)
Traditional Sec	-2.37e-03 (3.21e-03)	High Tech	-2.39e-02*** (4.95e-03)	Traditional Sec	1.34e-03 (1.08e-03)
Emerging Sec	-1.08e-02*** (2.54e-03)	High Tech*Year2007	5.48e-02*** (1.25e-02)	Emerging Sec	9.85e-03*** (3.08e-03)
Potential Sec	1.02e-02 (7.24e-03)	High Tech*Year2008	4.50e-02*** (1.73e-02)	Potential Sec	5.06e-02*** (6.38e-05)
Traditional Sec *Year2007	6.77e-03 (7.59e-03)	High Tech*Year2009	-6.70e-02* (4.00e-02)	Ownership1*year2003	-7.08e-02** (3.17e-02)
Traditional Sec *Year2008	9.64e-03 (1.21e-02)			Ownership1*year2008	7.57e-02*** (1.81e-02)
Traditional Sec *Year2009	-3.49e-02 (4.01e-02)			Ownership2*Year2003	-9.03e-02*** (3.20e-02)
Emerging Sec *Year2007	3.07e-02*** (6.12e-03)			Ownership3*Year2003	-6.88e-02** (3.18e-02)
Emerging Sec *Year2008	3.46e-02*** (9.55e-03)			Ownership4*Year2003	-6.53e-02** (3.23e-02)
Emerging Sec *Year2009	-6.88e-02*** (2.55e-02)			Ownership5*Year2003	-5.98e-02* (3.18e-02)
Potential Sec *Year2007	2.14e-02 (1.77e-02)				
Potential Sec *Year2008	2.38e-02 (2.82e-02)				

columns (i) and (ii) are the results of the model stratified by found year; columns (iii) and (iv) are the results of the model stratified by ownership; columns (v) and (vi) are the models stratified by technology level and industrial sector respectively.

As can be seen from Table 9, the branch of SMEs owned by foreign investors except Hong Kong, Macao and Taiwan investors (ownership 8) have the worst survival conditions compared to that of the other ownership types. The survival conditions

of the SMEs owned by Hong Kong, Macao and Taiwan investors (ownership 9) are better than that of the SMEs owned by foreign investors except Hong Kong, Macao and Taiwan investors (Ownership 7) since they are more familiar with

Table 6. Contd.

Potential Sec *Year2009	-1.57e-02 (9.49e-02)				
Constant	1.97*** (1.33e-02)	Constant	1.97*** (1.33e-02)	Constant	1.95*** (4.81e-03)
N	403745	N	403745	N	403745
X ² (LR test)	487416.70***	X ² (LR test)	487340.67***	X ² (LR test)	488164.59***
Log likelihood	-12285.21	Log likelihood	-12323.221	Log likelihood	-11911.26
AIC	24670.41	AIC	24706.44	AIC	23962.53

Ownership1 to Ownership6 respectively present the ownership type of the limited liability company, the corporate-funded enterprises, the branch office and business units, the partnership firm, the sole proprietorship, and the “three-plus-one” trading-mix (custom manufacturing with materials, designs or samples supplied and compensation trade. We omit the coefficients of Traditional*Year2001 to Traditional*Year2006, New Sec*Year2001 to New Sec*Year2006 and Potential*Year2001 to Potential*Year2006 in model (i); omit the coefficients of High Tech*Year2001 to High Tech*Year2006 in model (ii); omit the coefficients which is insignificant in model (iii) subject to the constraints of space. Figures in parentheses denote the standard deviation value, *, **, *** respectively represents the confidence level at 90, 95 and 99%.

Table 7. The Weibull regressions of SMEs of different ownership types for domestic SMEs.

Explanatory variable	Ownership 1	Ownership 2	Ownership 3	Ownership 4	Ownership 5	Ownership 6
Age	4.89e-02*** (7.03e-5)	4.09e-02*** (2.45e-04)	4.59e-02*** (1.84e-04)	5.70e-02*** (4.82e-04)	5.90e-02*** (1.99e-04)	3.93e-02*** (4.05e-04)
Age ²	-2.13e-04*** (5.27e-07)	-1.57e-04*** (1.83e-06)	-1.90e-04*** (1.39e-06)	-2.54e-04*** (3.80e-06)	-2.70e-04*** (1.64e-06)	-1.50e-04*** (2.83e-06)
Capital	3.16e-05*** (2.43e-06)	-6.92e-06 (1.11e-05)	3.59e-05*** (1.17e-05)	7.69e-05** (3.67e-05)	7.08e-05*** (1.90e-05)	1.86e-05* (1.08e-05)
Year2001	-1.29e-02*** (1.14e-03)	-6.22e-03* (3.32e-03)	3.56e-04 (2.80e-03)	1.11e-02 (1.02e-02)	9.64e-03** (4.44e-03)	-1.29e-02*** (4.91e-03)
Year2002	-1.19e-02*** (1.17e-03)	5.77e-03 (4.08e-03)	3.23e-03 (2.98e-03)	1.19e-02 (1.05e-02)	1.34e-02*** (4.61e-03)	1.28e-02** (5.81e-03)
Year2003	-5.63e-04 (1.16e-03)	1.99e-02*** (3.97e-03)	1.22e-02*** (3.24e-03)	3.07e-02*** (1.01e-02)	3.44e-02*** (4.68e-03)	2.98e-02*** (7.04e-03)
Year2004	1.39e-02*** (1.21e-03)	4.05e-02*** (5.49e-03)	4.48e-02*** (4.17e-03)	6.31e-02*** (1.08e-02)	6.51e-02*** (5.03e-03)	5.77e-02*** (7.67e-03)
Year2005	5.98e-02*** (1.36e-03)	9.56e-02*** (6.68e-03)	1.09e-01*** (4.83e-03)	9.31e-02*** (1.16e-02)	1.11e-01*** (5.31e-03)	1.14e-01*** (1.19e-02)
Year2006	1.47e-01*** (1.48e-03)	1.64e-01*** (9.84e-03)	1.77e-01*** (5.98e-03)	2.12e-01*** (1.34e-02)	2.52e-01*** (6.05e-03)	1.41e-01*** (1.32e-02)
Year2007	2.49e-01*** (1.86e-03)	2.46e-01*** (2.02e-02)	2.91e-01*** (6.72e-03)	3.91e-01*** (1.74e-02)	4.31e-01*** (7.17e-03)	2.20e-01*** (3.04e-02)
Year2008	2.87e-01*** (2.92e-03)	2.44e-01*** (4.46e-02)	2.65e-01*** (1.12e-02)	5.10e-01*** (2.82e-02)	5.28e-01*** (9.23e-03)	1.18 (145.51)
Year2009	2.32e-01*** (1.44e-02)	1.12 (134.21)	2.30e-01*** (3.88e-02)	5.81e-01*** (9.93e-02)	4.82e-01*** (2.06e-02)	1.14 (2316.35)
Traditional Sec	-3.00e-03* (1.56e-03)	1.61e-03 (4.68e-03)	7.78e-03 (6.91e-03)	-3.09e-02*** (1.11e-02)	-1.92e-02*** (3.60e-03)	-1.12e-02** (5.11e-03)
Emerging Sec	1.62e-03 (1.09e-03)	2.38e-03 (4.73e-03)	7.98e-03 (5.72e-03)	-2.60e-03 (9.29e-03)	-7.82e-03** (3.39e-03)	-3.88e-03 (4.21e-03)
Potential Sec	9.20e-03*** (3.51e-03)	3.19e-03 (1.17e-02)	-1.69e-02 (1.49e-02)	-3.37e-02 (2.07e-02)	1.86e-02** (8.33e-03)	1.32e-02 (1.03e-02)
Constant	2.07*** (1.83e-03)	2.26*** (6.54e-03)	2.12*** (4.98e-03)	1.82*** (1.28e-02)	1.77*** (5.63e-03)	2.29*** (1.28e-02)
N	289331	8862	25159	8204	69170	2944
X ² (LR test)	321377.14***	21611.91***	47136.73***	12478.88***	88687.15***	6543.90***
Log likelihood	2875.28	1611.21	1170.5034	-863.51	-10116.54	630.83963
AIC	-5716.56	-3188.41	-2307.007	1761.01	20267.09	-1227.679

Ownership1 to Ownership6 respectively present the ownership type of the limited liability company, the corporate-funded enterprises, the branch office and business units, the partnership firm, the sole proprietorship, and the “three-plus-one” trading-mix (custom manufacturing with materials, designs or samples supplied and compensation trade. Figures in parentheses denote the standard deviation value, *, **, *** respectively represents the confidence level at 90, 95 and 99%.

Table 8. The Weibull regressions of SMEs of different industrial types for domestic SMEs.

Explanatory variable	High tech	Traditional sec	Emerging sec	Potential sec
Age	4.62e-02*** (3.64e-04)	5.11e-02*** (2.79e-04)	5.04e-02*** (1.99e-04)	5.07e-02*** (6.29e-04)
Age ²	-1.93e-04*** (2.70e-06)	-2.22e-04*** (2.19e-06)	-2.17e-04*** (1.53e-06)	-2.17e-04*** (4.80e-06)
Capital	-4.43e-06 (1.11e-05)	7.03e-05*** (1.64e-05)	2.76e-05*** (9.35e-06)	3.26e-05 (2.54e-05)
Year2001	-1.97e-03 (6.17e-03)	-1.55e-02*** (5.38e-03)	3.10e-03 (3.67e-03)	-3.83e-02*** (1.13e-02)
Year2002	1.48e-02** (6.20e-03)	-1.05e-02** (5.32e-03)	9.45e-03** (3.79e-03)	-1.39e-02 (1.15e-02)
Year2003	2.58e-02*** (6.08e-03)	1.18e-02** (5.57e-03)	2.89e-02*** (3.82e-03)	1.78e-02 (1.14e-02)
Year2004	4.20e-02*** (6.74e-03)	4.51e-02*** (5.98e-03)	5.43e-02*** (3.93e-03)	4.26e-02*** (1.25e-02)
Year2005	9.28e-02*** (7.62e-03)	1.00e-01*** (6.55e-03)	1.07e-01*** (4.55e-03)	9.57e-02*** (1.44e-02)
Year2006	2.00e-01*** (9.16e-03)	2.14e-01*** (7.57e-03)	2.17e-01*** (5.27e-03)	2.02e-01*** (1.61e-02)
Year2007	2.88e-01*** (1.17e-02)	3.52e-01*** (9.57e-03)	3.47e-01*** (6.85e-03)	3.40e-01*** (2.11e-02)
Year2008	2.91e-01*** (1.60e-02)	4.23e-01*** (1.48e-02)	4.05e-01*** (1.03e-02)	4.01e-01*** (3.24e-02)
Year2009	7.33e-02** (3.26e-02)	3.50e-01*** (4.43e-02)	2.52e-01*** (2.39e-02)	3.19e-01*** (9.91e-02)
Ownership 1	3.38e-02 (7.49e-02)	1.92e-01*** (7.49e-02)	9.86e-03 (5.47e-02)	1.12e-01 (9.69e-02)
Ownership 2	2.34e-02 (7.58e-02)	1.93e-01*** (7.51e-02)	1.05e-02 (5.50e-02)	8.84e-02 (9.81e-02)
Ownership 3	1.57e-02 (7.58e-02)	2.02e-01*** (7.52e-02)	3.10e-02 (5.50e-02)	7.76e-02 (9.80e-02)
Ownership 4	2.29e-02 (7.52e-02)	1.58e-01** (7.52e-02)	-8.02e-03 (5.50e-02)	5.25e-02 (9.78e-02)
Ownership 5	1.65e-02 (7.50e-02)	1.69e-01** (7.48e-02)	-1.13e-02 (5.47e-02)	1.01e-01 (9.69e-02)
Ownership 6	9.05e-03 (7.52e-02)	1.20e-01 (7.52e-02)	-5.27e-02 (5.49e-02)	4.53e-02 (9.79e-02)
Constant	2.08*** (7.59e-02)	1.80*** (7.49e-02)	1.99*** (5.50e-02)	1.90*** (9.89e-02)
N	9474	22524	42631	5403
X ² (LR test)	10593.80***	27348.85***	49119.43***	5539.29***
Log likelihood	96.77	-1307.00	-1449.03	-253.56
AIC	-153.54	2654.01	2938.05	547.13

Figures in parentheses denote the standard deviation value, *, **, *** respectively represents the confidence level at 90, 95 and 99%.

the language and culture of Guangdong province. The SMEs in the traditional sectors confront higher risk of business failure since the coefficients are significantly negative. The coefficients of high tech are insignificant though they are positive. Different from the survival conditions of the domestic enterprises, the conditions of foreign owned enterprises begin to worsen in year 2008. This may be because the foreign investors with-

draw the investment rapidly and transfer to other regions instead when the external environment becomes worse. After 2008, the investment environment of Guangdong was becoming worse, thus, the foreign investors rapidly transfer their investment to some other cheaper cost regions, such as Vietnam and Eastern Africa.

After estimating the strata model, we further estimate the model in which the samples are

divided into different size classes by the size of the initial capital of each enterprise. Similar to the previous methods that have been done on the domestic SMEs, we estimate the models of the total sample, the sub-sample whose initial capital below 100 thousand (contained 100 thousand) dollars, the sub-sample whose initial capital between 100 thousand to 1 million (contained 1 million) dollars and the sub-sample whose initial

Table 9. Estimates of the Weibull duration regression for foreign owned SMEs (Strata model).

Explanatory variable	Stratified by year		Stratified by ownership		Stratified by technology level	Stratified by industrial sector
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Age	4.27e-02*** (1.79e-04)	4.27e-02*** (1.79e-04)	4.30e-02*** (1.73e-04)	4.29e-02*** (1.73e-04)	4.31e-02*** (1.74e-04)	4.31e-02*** (1.73e-04)
Age ²	-1.72e-04*** (1.37e-06)	-1.72e-04*** (1.37e-06)	-1.75e-04*** (1.30e-06)	-1.75e-04*** (1.30e-06)	-1.76e-04*** (1.31e-06)	-1.76e-04*** (1.30e-06)
Capital	5.61e-06** (2.72e-06)	5.57e-06** (2.72e-06)	6.81e-06** (3.11e-06)	6.91e-06** (3.11e-06)	7.91e-06** (3.22e-06)	7.23e-06** (3.19e-06)
Year2001			1.02e-04 (2.38e-03)	2.57e-04 (2.39e-03)	-9.48e-04 (2.42e-03)	-1.44e-03 (2.40e-03)
Year2002			2.90e-04 (2.47e-03)	2.43e-05 (2.47e-03)	5.44e-04 (2.50e-03)	7.07e-04 (2.48e-03)
Year2003			1.08e-02*** (2.59e-03)	1.04e-02*** (2.59e-03)	1.01e-02*** (2.64e-03)	1.02e-02*** (2.63e-03)
Year2004			3.10e-02*** (2.83e-03)	3.07e-02*** (2.83e-03)	3.18e-02*** (2.90e-03)	3.16e-02*** (2.88e-03)
Year2005			7.14e-02*** (3.36e-03)	7.14e-02*** (3.37e-03)	7.41e-02*** (3.46e-03)	7.36e-02*** (3.44e-03)
Year2006			1.67e-01*** (4.79e-03)	1.68e-01*** (4.79e-03)	1.73e-01*** (4.94e-03)	1.72e-01*** (4.94e-03)
Year2007			2.15e-01*** (5.73e-03)	2.16e-01*** (5.73e-03)	2.23e-01*** (5.91e-03)	2.22e-01*** (5.92e-03)
Year2008			2.00e-01*** (1.09e-02)	2.01e-01*** (1.09e-02)	2.12e-01*** (1.13e-02)	2.11e-01*** (1.14e-02)
Year2009			1.07e-02 (3.72e-02)	1.14e-02 (3.72e-02)	2.49e-02 (3.87e-02)	2.11e-02 (3.78e-02)
Ownership7	3.30e-02*** (6.10e-03)	3.10e-02*** (6.04e-03)			5.25e-02*** (7.01e-03)	5.82e-02*** (7.37e-03)
Ownership8	1.56e-02** (6.74e-03)	1.35e-02** (6.70e-03)			3.53e-02*** (7.48e-03)	4.11e-02*** (7.84e-03)
Ownership9	3.41e-02*** (5.98e-03)	3.17e-02*** (5.91e-03)			5.38e-02*** (6.87e-03)	5.99e-02*** (7.23e-03)
Traditional Sec	-5.52e-03*** (1.68e-03)		-1.05e-02*** (1.84e-03)			
Emerging Sec	-1.21e-03 (1.59e-03)		-1.86e-03 (1.69e-03)			
Potential Sec	-3.93e-03 (4.49e-03)		-3.96e-03 (4.92e-03)			
High Tech		2.16e-03 (2.03e-03)		3.03e-03 (2.08e-03)		
Constant	2.19*** (7.77e-03)	2.19*** (7.76e-03)	2.22*** (4.85e-03)	2.22*** (4.83e-03)	2.17*** (8.43e-03)	2.15*** (8.94e-03)
N	28446	28446	28446	28446	28446	28446
X ² (LR test)	38262.17	38252.20	37746.56	37715.84	37659.98	37727.03
Log likelihood	3266.06	3261.08	2799.67	2784.31	2690.25	2721.38
AIC	-6474.13	-6468.15	-5553.34	-5526.63	-5342.50	-5396.76

Ownership7 to Ownership10 respectively present the SMEs owned by foreign investors except Hong Kong, Macao and Taiwan investors, the branch of SMEs owned by foreign investors except Hong Kong, Macao and Taiwan investors, the SMEs owned by Hong Kong, Macao and Taiwan investors and Business in China. Figures in parentheses denote the standard deviation value, *, **, *** respectively represents the confidence level at 90, 95 and 99%.

capital above 1 million dollars (and below 10 million dollars). The results are shown in Table 10. Generally the results in Table 10 are consistent with results in Table 9 except some minor differences. For example, the SMEs in the below 100 thousand Yuan group and found in 2008 have better survival conditions, which is the main

difference compared to Table 9; in the groups of the initial capital below 100 thousand dollars and 100 thousand to 1 million dollars, the survival conditions of the SMEs owned by Hong Kong, Macao and Taiwan investors (ownership 9) are worse than that of the SMEs owned by foreign investors except Hong Kong, Macao and Taiwan

investors (ownership 7). However, in Table 10 we confirmed that the branch of SMEs owned by foreign investors except Hong Kong, Macao and Taiwan investors (ownership 8) have the worst survival conditions and the SMEs in traditional sectors have higher risk of death. In order to test if the foreign owned SMEs' survival conditions

Table 10. Estimates of the Weibull duration regression for foreign owned SMEs of different capital size.

Explanatory variable	Total sample		100 thousand below		100 thousand to 1 million		1 million above	
Age	4.31e-02*** (1.74e-04)	4.31e-02*** (1.74e-04)	4.84e-02*** (1.18e-03)	4.83e-02*** (1.18e-03)	4.34e-02*** (2.69e-04)	4.33e-02*** (2.69e-04)	4.25e-02*** (2.28e-04)	4.25e-02*** (2.28e-04)
Age ²	-1.76e-04*** (1.31e-06)	-1.76e-04*** (1.31e-06)	-2.08e-04*** (9.25e-06)	-2.08e-04*** (9.31e-06)	-1.78e-04*** (2.01e-06)	-1.78e-04*** (2.01e-06)	-1.72e-04*** (1.70e-06)	-1.72e-04*** (1.70e-06)
Capital	7.72e-06** (3.22e-06)	7.85e-06** (3.21e-06)	-3.99e-04 (2.01e-03)	-9.12e-04 (2.00e-03)	1.76e-04*** (4.05e-05)	1.92e-04*** (4.00e-05)	1.29e-06 (3.86e-06)	9.12e-07 (3.85e-06)
Year2001	-1.01e-03 (2.41e-03)	-8.88e-04 (2.41e-03)	-1.43e-02 (1.92e-02)	-1.17e-02 (1.91e-02)	3.67e-03 (3.55e-03)	3.09e-03 (3.56e-03)	-6.20e-03* (3.25e-03)	-5.83e-03* (3.25e-03)
Year2002	1.05e-03 (2.50e-03)	5.50e-04 (2.50e-03)	-1.02e-02 (2.05e-02)	-1.12e-02 (2.02e-02)	7.68e-03** (3.89e-03)	6.88e-03* (3.88e-03)	-2.56e-03 (3.23e-03)	-2.47e-03 (3.23e-03)
Year2003	1.05e-02*** (2.64e-03)	1.01e-02*** (2.64e-03)	5.25e-03 (2.09e-02)	8.59e-03 (2.09e-02)	1.74e-02*** (4.05e-03)	1.67e-02*** (4.03e-03)	7.92e-03** (3.46e-03)	7.93e-03** (3.46e-03)
Year2004	3.21e-02*** (2.90e-03)	3.18e-02*** (2.90e-03)	3.65e-02 (2.65e-02)	4.07e-02 (2.67e-02)	3.90e-02*** (4.94e-03)	3.93e-02*** (4.94e-03)	2.79e-02*** (3.52e-03)	2.76e-02*** (3.52e-03)
Year2005	7.42e-02*** (3.46e-03)	7.41e-02*** (3.46e-03)	6.63e-02** (2.62e-02)	6.83e-02*** (2.63e-02)	7.47e-02*** (5.31e-03)	7.47e-02*** (5.32e-03)	7.25e-02*** (4.47e-03)	7.27e-02*** (4.47e-03)
Year2006	1.73e-01*** (4.94e-03)	1.73e-01*** (4.94e-03)	2.04e-01*** (3.79e-02)	2.06e-01*** (3.80e-02)	1.71e-01*** (7.80e-03)	1.71e-01*** (7.80e-03)	1.67e-01*** (6.23e-03)	1.68e-01*** (6.23e-03)
Year2007	2.23e-01*** (5.91e-03)	2.23e-01*** (5.91e-03)	2.32e-01*** (3.33e-02)	2.36e-01*** (3.35e-02)	2.18e-01*** (9.10e-03)	2.18e-01*** (9.10e-03)	2.21e-01*** (7.97e-03)	2.21e-01*** (7.97e-03)
Year2008	2.11e-01*** (1.13e-02)	2.12e-01*** (1.13e-02)	2.54e-01*** (5.72e-02)	2.55e-01*** (5.76e-02)	1.98e-01*** (1.59e-02)	1.98e-01*** (1.59e-02)	2.17e-01*** (1.74e-02)	2.17e-01*** (1.74e-02)
Year2009	2.43e-02 (3.86e-02)	2.47e-02 (3.86e-02)	2.00 (8781.32)	1.38 (237.09)	9.14e-03 (5.62e-02)	9.26e-03 (5.62e-02)	6.82e-03 (5.01e-02)	7.53e-03 (5.01e-02)
Ownership7	5.55e-02*** (7.07e-03)	5.26e-02*** (7.02e-03)	1.35e-01*** (3.27e-02)	1.24e-01*** (3.26e-02)	1.18e-01*** (1.37e-02)	1.16e-01*** (1.36e-02)	2.77e-02*** (8.63e-03)	2.54e-02*** (8.57e-03)
Ownership8	3.87e-02*** (7.53e-03)	3.53e-02*** (7.49e-03)	1.02e-01*** (3.09e-02)	9.85e-02*** (3.08e-02)	1.06e-01*** (1.41e-02)	1.02e-01*** (1.40e-02)	2.65e-03 (1.30e-02)	1.74e-03 (1.30e-02)
Ownership9	5.72e-02*** (6.92e-03)	5.39e-02*** (6.87e-03)	1.26e-01*** (3.17e-02)	1.19e-01*** (3.16e-02)	1.18e-01*** (1.35e-02)	1.15e-01*** (1.34e-02)	2.84e-02*** (8.44e-03)	2.58e-02*** (8.38e-03)
Traditional Sec	-1.00e-02*** (1.88e-03)		-2.07e-02 (1.56e-02)		-1.01e-02*** (2.87e-03)		-7.32e-03*** (2.47e-03)	
Emerging Sec	-1.84e-03 (1.76e-03)		-2.91e-02 (2.10e-02)		3.42e-03 (2.80e-03)		-4.46e-03** (2.17e-03)	
Potential Sec	-1.83e-03 (5.05e-03)		3.14e-02 (3.54e-02)		6.10e-04 (8.24e-03)		-4.32e-03 (6.29e-03)	
High Tech		2.94e-03 (2.17e-03)		3.75e-02 (2.71e-02)		9.45e-03*** (3.56e-03)		-3.75e-03 (2.61e-03)
Constant	2.16*** (8.44e-03)	2.17*** (8.44e-03)	1.97*** (4.45e-02)	1.97*** (4.47e-02)	2.08*** (1.60e-02)	2.08*** (1.60e-02)	2.21*** (1.05e-02)	2.21*** (1.05e-02)
N	28446	28446	836	836	9907	9907	17703	17703
X ² (LR test)	37699.52***	37672.60***	1270.64***	1268.46***	15877.68	15866.22	20498.69***	20490.98***
Log likelihood	2703.58	2690.12	6.81	5.71	1410.41	1404.69	1420.38	1416.53
AIC	-5367.17	-5344.24	26.38	24.57	-2780.83	-2773.38	-2800.76	-2797.057

Ownership7 to Ownership10 respectively present the SMEs owned by foreign investors except Hong Kong, Macao and Taiwan investors, the branch of SMEs owned by foreign investors except Hong Kong, Macao and Taiwan investors, the SMEs owned by Hong Kong, Macao and Taiwan investors and Business in China. Figures in parentheses denote the standard deviation value, *, **, *** respectively represents the confidence level at 90, 95 and 99%.

become worse in recent years, we examine the moderating effect of the found year on the relationship between different industrial sectors, technology level, ownership types of enterprises and enterprises' survival, respectively. The results are shown in Table 11.

As can be seen, the product terms of the

traditional sec, emerging sec, and potential sec with the year2008 are all insignificant, implying that there is no moderating effect of the year 2008 on the relationship between the industrial sector and enterprises' survival. Furthermore, the product term of ownership 7 and the year2008 is significantly negative, and the product term of

ownership 7 and the year2007 and the product term of ownership 8 and the year2007 are both significantly positive, implying that year 2008 has a negative moderating effect on the relationship between the ownership 7 and its SMEs' survival. In Table 12, we estimate the survival conditions of different ownerships during the period from 2000

Table 11. The test of the moderating effect of the year on different types of foreign owned SMEs.

Explanatory variable	(i)	Explanatory variable	(ii)	Explanatory variable	(iv)
Age	4.32e-02*** (1.75e-04)	Age	4.31e-02*** (1.74e-04)	Age	4.31e-02*** (1.74e-04)
Age ²	-1.76e-04*** (1.31e-06)	Age ²	-1.76e-04*** (1.31e-06)	Age ²	-1.76e-04*** (1.30e-06)
Capital	7.98e-06** (3.22e-06)	Capital	8.14e-06** (3.22e-06)	Capital	8.10e-06** (3.23e-06)
Year2001	3.65e-03 (3.50e-03)	Year2001	-2.82e-03 (2.59e-03)	Year2001	-1.77e-04 (2.28e-02)
Year2002	3.37e-03 (3.71e-03)	Year2002	1.30e-03 (2.69e-03)	Year2002	6.09e-02** (3.01e-02)
Year2003	8.18e-03** (3.77e-03)	Year2003	1.06e-02*** (2.79e-03)	Year2003	4.21e-03 (2.28e-02)
Year2004	2.92e-02*** (4.11e-03)	Year2004	3.30e-02*** (3.07e-03)	Year2004	6.07e-02** (2.63e-02)
Year2005	7.15e-02*** (4.75e-03)	Year2005	7.40e-02*** (3.60e-03)	Year2005	8.87e-02*** (3.25e-02)
Year2006	1.78e-01*** (6.83e-03)	Year2006	1.73e-01*** (5.16e-03)	Year2006	4.49e-02 (3.01e-02)
Year2007	2.39e-01*** (8.54e-03)	Year2007	2.24e-01*** (6.20e-03)	Year2007	1.01e-01*** (3.60e-02)
Year2008	2.28e-01*** (1.69e-02)	Year2008	2.20e-01*** (1.28e-02)	Year2008	2.24e-01*** (1.37e-02)
Year2009	7.84e-01 (55.81)	Year2009	5.69e-02 (5.44e-02)	Year2009	7.93e-01 (135.40)
Ownership7	5.51e-02*** (7.07e-03)	Ownership7	5.25e-02*** (7.02e-03)	Ownership7	7.21e-02*** (1.86e-02)
Ownership8	3.84e-02*** (7.54e-03)	Ownership8	3.55e-02*** (7.49e-03)	Ownership8	4.69e-02** (1.87e-02)
Ownership9	5.64e-02*** (6.92e-03)	Ownership9	5.39e-02*** (6.87e-03)	Ownership9	6.18e-02*** (1.81e-02)
Traditional Sec	-1.00e-02** (4.33e-03)	High Tech	3.39e-03 (5.21e-03)	Traditional Sec	-1.03e-02*** (1.88e-03)
Emerging Sec	1.07e-03 (4.05e-03)	High Tech*Year2007	-6.78e-03 (1.67e-02)	Emerging Sec	-1.84e-03 (1.76e-03)
Potential Sec	1.21e-02 (1.09e-02)	High Tech*Year2008	-4.78e-02* (2.57e-02)	Potential Sec	-2.12e-03 (5.04e-03)
Traditional Sec *Year2007	-4.04e-02*** (1.27e-02)	High Tech*Year2009	-1.23e-01 (7.67e-02)	Ownership7*year2002	-6.73e-02** (3.07e-02)
Traditional Sec *Year2008	-4.09e-02 (2.65e-02)			Ownership7*Year2006	1.13e-01*** (3.16e-02)
Traditional Sec *Year2009	4.33e-02 (166.01)			Ownership7*Year2007	9.86e-02*** (3.77e-02)
Emerging Sec *Year2007	-1.91e-02 (1.31e-02)			Ownership7*Year2008	-5.51e-02** (2.28e-02)
Emerging Sec *Year2008	-2.76e-02 (2.55e-02)			Ownership9*Year2002	-6.14e-02** (3.03e-02)
Emerging Sec *Year2009	-8.36e-01 (55.81)			Ownership9*year2006	1.32e-01*** (3.06e-02)
Potential Sec*Year2007	-5.77e-02* (3.40e-02)			Ownership9*year2007	1.29e-01*** (3.65e-02)
Potential Sec*Year2008	6.60e-01 (52.64)				
Potential Sec*Year2009	2.68e-02 (413.07)				

to 2009. The coefficients of some years of the ownership 8 (the branch of SMEs owned by foreign investors except Hong Kong, Macao and Taiwan investors) and ownership 10 (Business in China) are omitted during the estimation because

the numbers of the samples of these two ownership types are too small. We can see from the first and third columns of Table 12 that the enterprises newly founded in 2008 have worse survival conditions compared to that of 2007. We

confirmed that the SMEs of foreign owned in traditional sectors have higher risk of business failure according to Table 12.

In Table 13, we analyze the survival conditions of different sectors. As all the models show that

Table 11. Contd.

Constant	2.16*** (8.62e-03)	Constant	2.17*** (8.45e-03)	Constant	2.16*** (1.86e-02)
N	28446	N	28446	N	28446
X ² (LR test)	37761.04***	X ² (LR test)	37688.20***	X ² (LR test)	37784.07
Log likelihood	2734.3448	Log likelihood	2697.92	Log likelihood	2745.86
AIC	-5374.69	AIC	-5341.85	AIC	-5409.72

Ownership7 to Ownership10 respectively present the SMEs owned by foreign investors except Hong Kong, Macao and Taiwan investors, the branch of SMEs owned by foreign investors except Hong Kong, Macao and Taiwan investors, the SMEs owned by Hong Kong, Macao and Taiwan investors and Business in China. We omit the coefficients of Traditional*Year2001 to Traditional*Year2006, New Sec*Year2001 to New Sec*Year2006 and Potential*Year2001 to Potential*Year2006 in model (i); omit the coefficients of High Tech*Year2001 to High Tech*Year2006 in model (ii); omit the coefficients which is insignificant in model (iii) subject to the constraints of space. Figures in parentheses denote the standard deviation value, *, **, *** respectively represents the confidence level at 90, 95 and 99%.

Table 12. The Weibull regressions of SMEs of different ownership types for foreign owned SMEs.

Explanatory variable	Ownership7	Ownership8	Ownership9	Ownership10
Age	4.33e-02*** (3.53e-04)	4.40e-02*** (8.55e-04)	4.28e-02*** (2.03e-04)	4.44e-02*** (1.87e-03)
Age ²	-1.78e-04*** (2.67e-06)	-1.75e-04*** (6.78e-06)	-1.74e-04*** (1.52e-06)	-2.03e-04*** (1.43e-05)
Capital	6.45e-06 (6.05e-06)	7.04e-05 (5.18e-05)	6.33e-06* (3.61e-06)	-2.97e-06 (2.33e-05)
Year2001	-1.48e-02*** (5.41e-03)	-3.06e-02** (1.29e-02)	4.08e-03 (2.72e-03)	-8.92e-02*** (3.38e-02)
Year2002	-7.66e-03 (5.54e-03)	4.04e-02*** (1.55e-02)	3.54e-04 (2.82e-03)	-5.93e-02 (4.48e-02)
Year2003	-2.46e-03 (5.66e-03)	1.72e-02 (1.76e-02)	1.39e-02*** (2.99e-03)	-9.91e-02** (4.28e-02)
Year2004	1.26e-02** (5.90e-03)	9.27e-02*** (2.60e-02)	3.41e-02*** (3.28e-03)	-6.40e-02 (4.27e-02)
Year2005	4.91e-02*** (6.71e-03)	1.16e-01*** (3.67e-02)	7.63e-02*** (3.95e-03)	-3.26e-02 (4.85e-02)
Year2006	1.39e-01*** (9.50e-03)	-	1.74e-01*** (5.58e-03)	-8.30e-02* (4.47e-02)
Year2007	1.77e-01*** (1.09e-02)	-	2.23e-01*** (6.73e-03)	-3.52e-02 (4.84e-02)
Year2008	1.46e-01*** (1.75e-02)	-	2.14e-01*** (1.35e-02)	-
Year2009	7.03e-01 (1.76E+02)	-	3.18e-03 (3.75e-02)	-
Traditional Sec	1.59e-03 (4.37e-03)	-2.27e-02* (1.18e-02)	-1.20e-02*** (2.08e-03)	8.42e-01 (330.85)
Emerging Sec	-8.44e-04 (3.11e-03)	-5.74e-02** (2.27e-02)	-1.14e-03 (2.00e-03)	8.32e-01 (93.57)
Potential Sec	6.91e-03 (9.61e-03)	4.38e-02 (3.82e-02)	-8.70e-03 (5.70e-03)	-
Constant	2.23*** (9.69e-03)	2.15*** (2.16e-02)	2.23*** (5.44e-03)	2.28*** (5.10e-02)
N	6257	678	21429	82
X ² (LR test)	8117.75***	1839.21***	27551.28***	297.59***
Log likelihood	614.46	124.86	2069.5449	71.872274
AIC	-1194.91	-223.71	-4105.09	-115.7445

Ownership7 to Ownership10 respectively present the SMEs owned by foreign investors except Hong Kong, Macao and Taiwan investors, the branch of SMEs owned by foreign investors except Hong Kong, Macao and Taiwan investors, the SMEs owned by Hong Kong, Macao and Taiwan investors and Business in China. Figures in parentheses denote the standard deviation value, *, **, *** respectively represents the confidence level at 90, 95 and 99%.

Table 13. The Weibull regressions of SMEs of different industrial types for foreign owned SMEs.

Explanatory variable	High tech	Traditional sec	Emerging sec	Potential sec
Age	4.17e-02*** (4.51e-04)	4.18e-02*** (3.32e-04)	4.24e-02*** (2.92e-04)	4.14e-02*** (8.83e-04)
Age ²	-1.68e-04*** (3.37e-06)	-1.67e-04*** (2.49e-06)	-1.72e-04*** (2.15e-06)	-1.68e-04*** (6.46e-06)
Capital	-8.60e-06 (7.76e-06)	1.35e-05** (6.53e-06)	-3.30e-07 (4.88e-06)	2.06e-05 (1.38e-05)
Year2001	3.31e-03 (5.91e-03)	-8.82e-03* (4.79e-03)	-1.60e-03 (3.84e-03)	-1.29e-02 (1.21e-02)
Year2002	-3.60e-03 (6.14e-03)	5.96e-03 (4.81e-03)	-5.19e-03 (3.97e-03)	-1.42e-02 (1.17e-02)
Year2003	5.99e-03 (7.16e-03)	2.08e-02*** (5.12e-03)	6.35e-03 (4.34e-03)	-9.01e-03 (1.24e-02)
Year2004	2.40e-02*** (7.55e-03)	4.51e-02*** (5.81e-03)	2.29e-02*** (4.59e-03)	4.42e-03 (1.26e-02)
Year2005	7.42e-02*** (9.98e-03)	7.77e-02*** (6.61e-03)	6.60e-02*** (5.72e-03)	3.80e-02** (1.56e-02)
Year2006	1.57e-01*** (1.39e-02)	1.78e-01*** (1.11e-02)	1.37e-01*** (7.25e-03)	1.34e-01*** (2.97e-02)
Year2007	1.93e-01*** (1.58e-02)	1.87e-01*** (1.04e-02)	1.89e-01*** (9.92e-03)	1.26e-01*** (2.51e-02)
Year2008	1.39e-01*** (2.18e-02)	1.66e-01*** (2.06e-02)	1.61e-01*** (1.76e-02)	7.59e-01 (366.10)
Year2009	-1.10e-01** (5.01e-02)	9.45e-01 (1054.93)	-9.79e-02*** (3.38e-02)	6.59e-01 (4878.25)
Ownership7	2.79e-02** (1.37e-02)	-5.07e-01 (35.26)	-4.77e-01 (33.08)	-3.79e-03 (1.78e-02)
Ownership8		-5.27e-01 (35.26)	-5.29e-01 (33.08)	
Ownership9	3.41e-02** (1.35e-02)	-5.15e-01 (35.26)	-4.73e-01 (33.08)	-1.27e-02 (1.67e-02)
Constant	2.24*** (1.71e-02)	2.76 (35.26)	2.72 (33.08)	2.29E+00*** (2.61e-02)
N	3195	5706	8448	642
X ² (LR test)	5126.10	8727.51	11702.30	960.36
Log likelihood	505.59	783.75	1039.12	113.79
AIC	-979.18	-1533.50	-2044.24	-195.59

Ownership7 to Ownership10 respectively present the SMEs owned by foreign investors except Hong Kong, Macao and Taiwan investors, the branch of SMEs owned by foreign investors except Hong Kong, Macao and Taiwan investors, the SMEs owned by Hong Kong, Macao and Taiwan investors and Business in China. Figures in parentheses denote the standard deviation value, *, **, *** respectively represents the confidence level at 90, 95 and 99%.

the foreign owned SMEs' survival conditions became worse in 2008, we are confident that our results are robust.

Conclusions

In this paper, we evaluate the survival conditions of SMEs in Guangdong province, one of the most developed provinces located in China Southeast Coast, on the background of global financial crises. Specifically, we analyze the survival

conditions of SMEs of different ownerships, industrial sectors and technology level. The data samples from Guangdong province are specifically suitable for this topic, as it is one of the most developed and the earliest open areas in China. In the last 30 years, not only that many local entrepreneurs established their enterprises, many foreigners also invested in this region, especially the investors from Hong Kong, Macao and Taiwan, which provides great opportunity to research the survival conditions of different ownership types. Moreover, after 2008, the

Guangdong province was also one of the most influenced regions by various disadvantages, such as the increasing labor cost and material cost, the reduction of the export tax rebate rate of China, the appreciation of the RMB, the implications of the New Labor Contract Law in China, and particularly the break out of the global economic crises, et al.

From the ownership types point of view, our findings imply that in 2008, the survival conditions of foreign owned SMEs became worse but the survival conditions of domestic SMEs did not, but

in 2009, the survival conditions of domestic SMEs also began to worsen, implying the survival conditions of SMEs in Guangdong province which began to be impacted by global economic crisis. As to the worsening of survival conditions, domestic SMEs lag to the foreign owned SMEs, implying that the crises which the news reported indeed exist. Because of the continuing rise of the cost of labor and raw materials, the reduction of the export tax rebates, the continued appreciation of the Yuan and especially the implementation of the new labor law beginning in 2008 and the anti-inflationary policy, Guangdong is no longer a heaven for foreign investors, who then accelerated the pace of industrial transfer to lower cost areas, such as Vietnam and Eastern Africa. The survival conditions of SMEs owned by Hong Kong, Macao and Taiwan investors are much better than that of SMEs owned by other foreigners because they are more familiar and have more relationship to these regions, but their survival conditions is also worsening when entering 2008. Even though the domestic SMEs had better survival conditions in 2008, their survival conditions became worse in 2009 due to the impact of global economic crisis.

From the industrial point of view, this study find that the traditional sectors have worse survival conditions both for domestic and foreign owned SMEs. The potential sectors have better survival conditions for domestic SMEs; however, both SMEs in emerging sector and foreign owned SMEs in potential sector do not present a better survival condition, implying that there is no competitive advantage for the foreign owned SMEs in such sectors. For foreign owned enterprises, the high technologies SMEs have better survival conditions than the SMEs in other sectors, but high-tech domestic SMEs have worse survival conditions.

Since the global crisis still has an impact on many countries in the world, our findings have many implications as follows:

1. For domestic enterprises, the SMEs in emerging sector and potential sector have better survival conditions and the SMEs in traditional sector confront higher risk of death. Because the traditional sector is in the lower end of global manufacturing value chain, in recent years, the traditional sector is often criticized for low profit ratio and weak competitiveness. Since the entry barrier is low, the competition in traditional sector is more intense, which makes the SMEs in traditional sector confront higher risk of death. As the emerging sector and potential sector have broader market prospects and relatively higher entry barriers, the SMEs in these two sectors have better survival prospects. For this reason, the domestic SMEs in Guangdong province must accelerate the pace of industrial upgrading. The SMEs in traditional sector should change the previous way of using cheap labor to compete with others, increase investment in R&D, and cultivate their own brands and core competitiveness.

Though the government attaches most of their vigor on the development of emerging sectors and potential sectors to achieve the goal of industrial upgrading, they shouldn't neglect the industrial upgrading in traditional sector. Since high technology level enterprises confront the higher risk, the government should adopt measures to encourage the development of high-tech SMEs.

2. For foreign enterprises, most foreigners owned enterprises invest in Guangdong because of the low labor wages. Since the labor costs increase in recent years in Guangdong province, a large number of these foreign owned enterprises bankrupt or transfer to the regions of the world where labor costs are lower is a normal phenomenon, which may lead to many people unemployed, make the social unstable and influence the social security in China. The government should take steps to improve the quality of the workers, and attract many high-tech foreign enterprises to invest in this region, thereby improving the overall industrial level of the regions.

This paper presents a new examination of the SMEs' survival in Guangdong, China, the biggest emerging economies in the world. Especially, this study examines the SMEs' survival conditions under the context of global economic crisis, which make the demands from the developed countries plunge and impact the survival of SMEs relying on it. We confirm that the SMEs in the regions where highly rely on the demands from developed countries indeed encounter survival difficulties because of the global economic crisis. The SMEs in traditional sector also encounter higher risk of death. The foreign owned SMEs tend to transfer to lower labor costs regions immediately when the crisis comes. Since few researches have done on the topic of how the global economic crisis impact on the survival of SMEs, our research makes a contribution to the existing literatures. Even though, due to the constraint of the data's availability, this study only takes a few common factors into account, there are also some other factors which also play an important role in SMEs survival. Though it may cause some deviation of the results, our results are robust in many different situations we have analysed, which indicate that the results are correct overall. In addition, our data come from only one province of southeast China, but we consider our results will be robust to those regions with similar features of Guangdong provinces. For example, the SMEs in Zhejiang, another province located in the southeast coastal area of China, is also enduring survival difficulties under the impact of the global economic crisis. By contrast, in the central and western areas of China, since those regions do not severely rely on the exports and the impact of the global economic crisis to these regions is less serious, the SMEs in these regions may not present the same survival difficulties as SMEs in Guangdong and Zhejiang or other southeast coastal provinces of China. Moreover, the

SMEs in other emerging economies or developed economies presenting the same feature of SMEs in Guangdong province also need reexaminations.

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